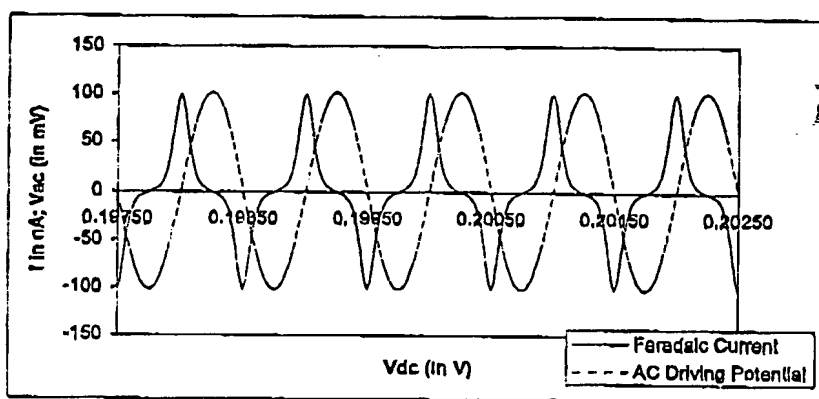
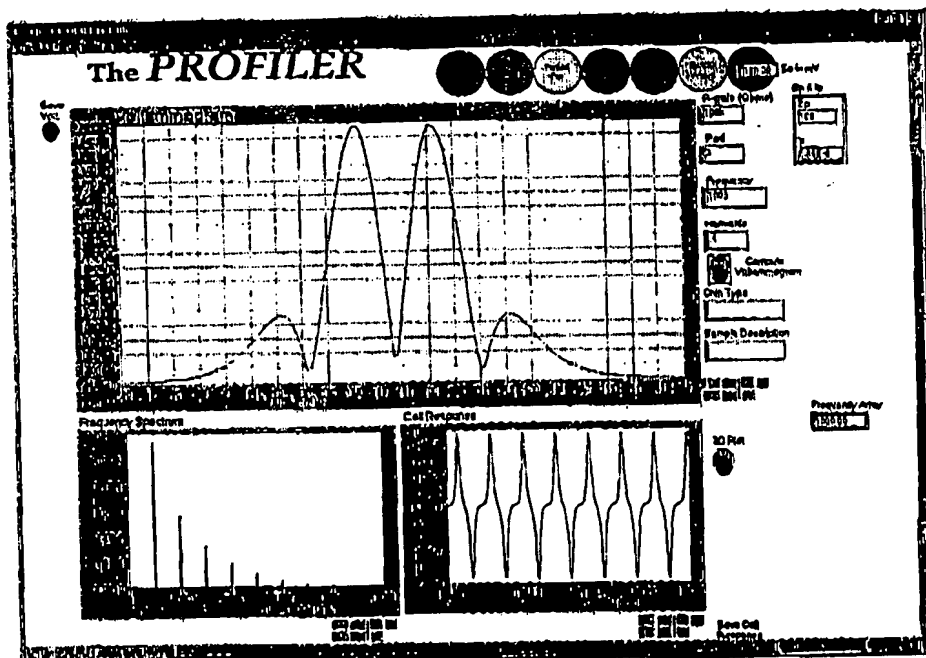


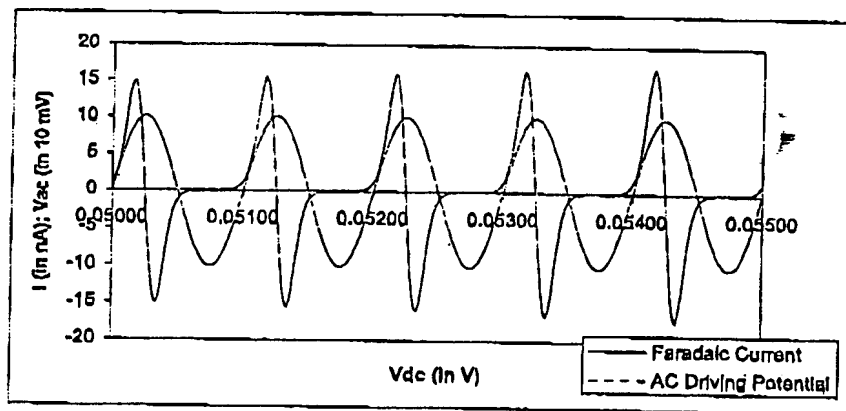
Fig 2A



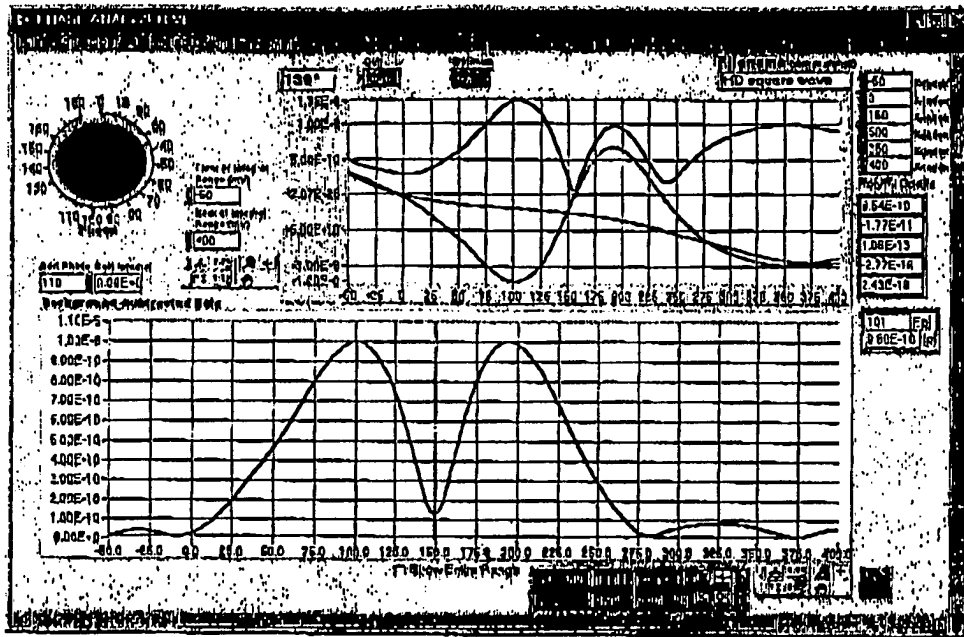
2B



2C



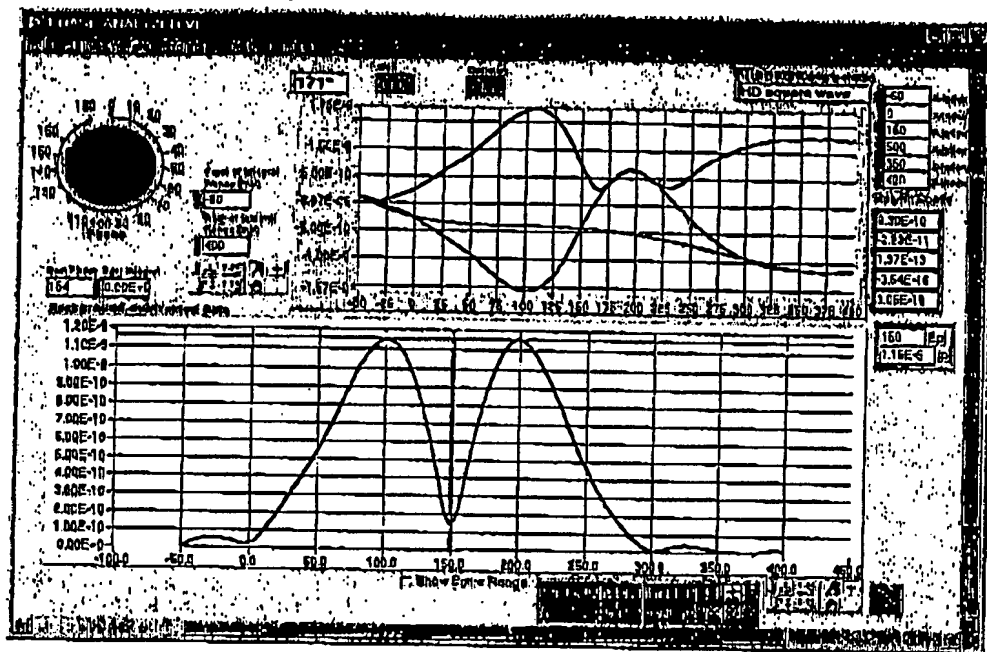
2D



2<sup>nd</sup> harmonic SW

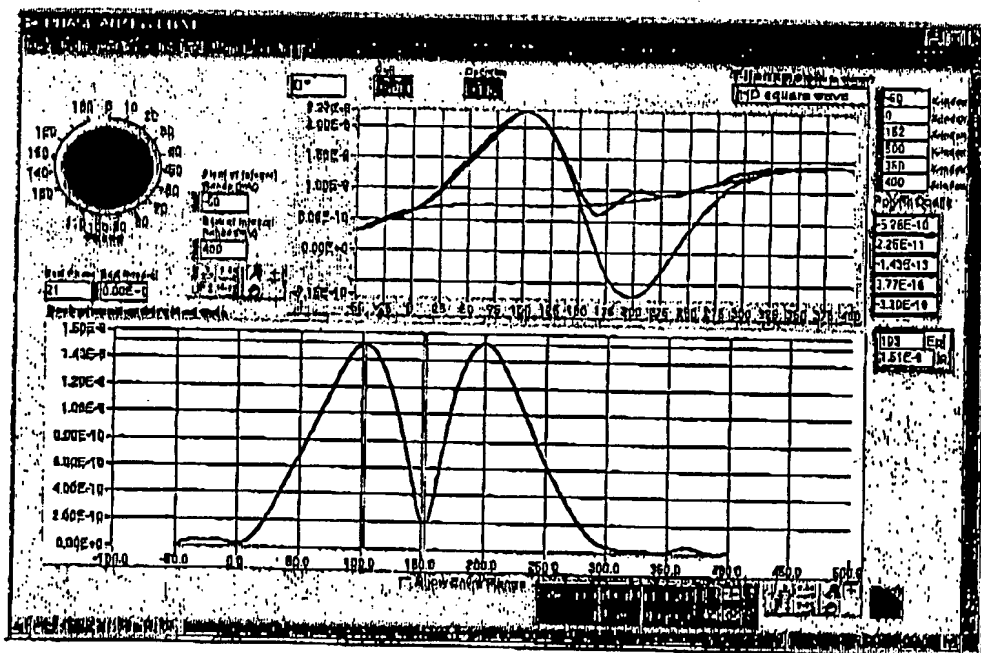
Fig 3A

3B



4<sup>th</sup> harmonic SW

3C



6<sup>th</sup> Harmonic SW

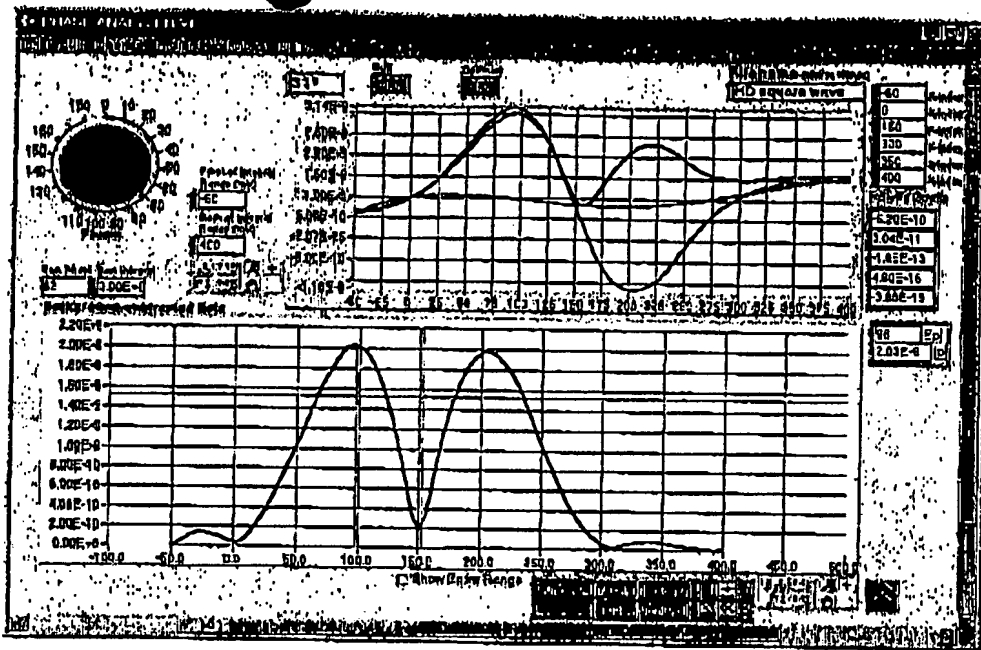
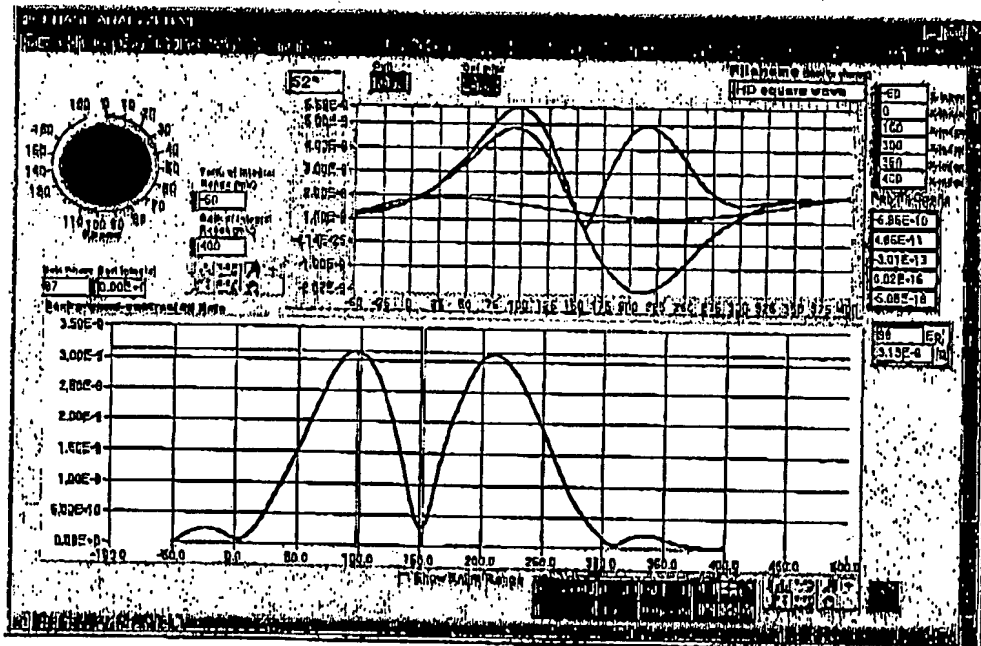
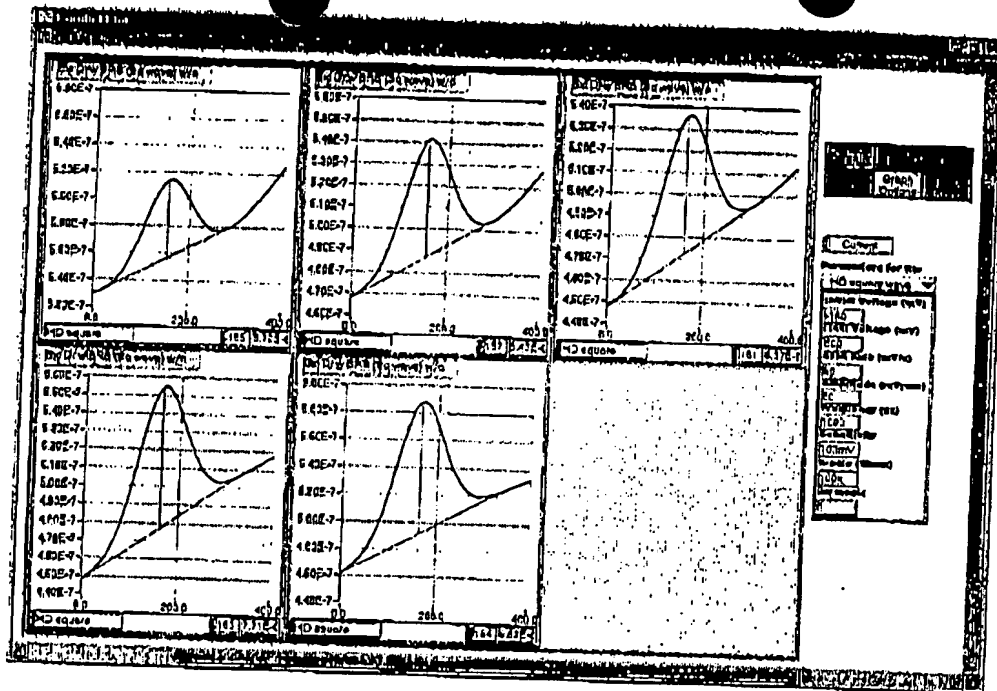


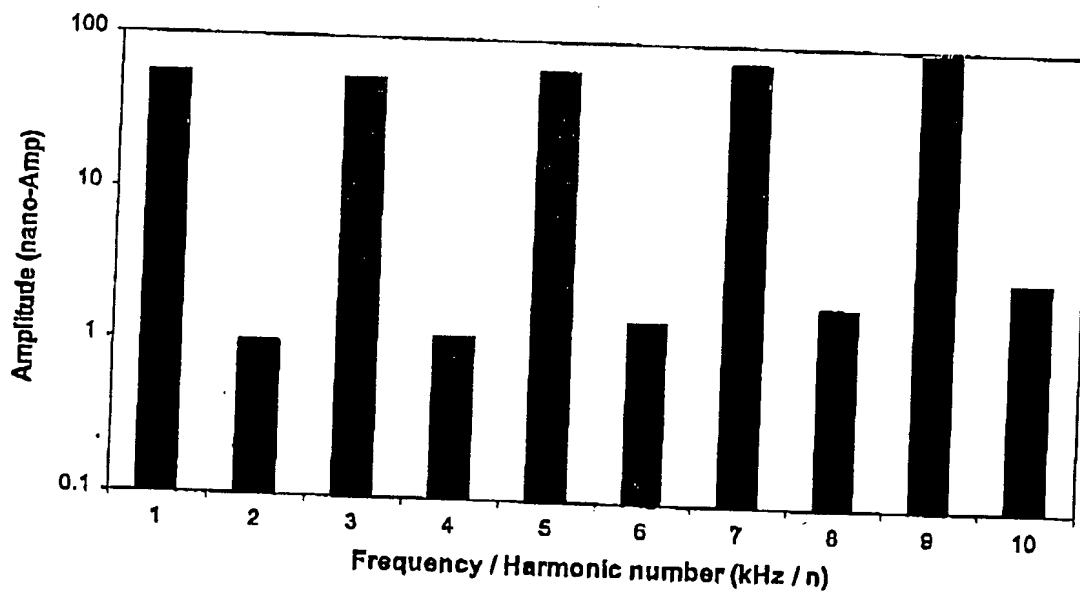
Fig 3D



3E



1,3,5,7, and 9th harmonic SW



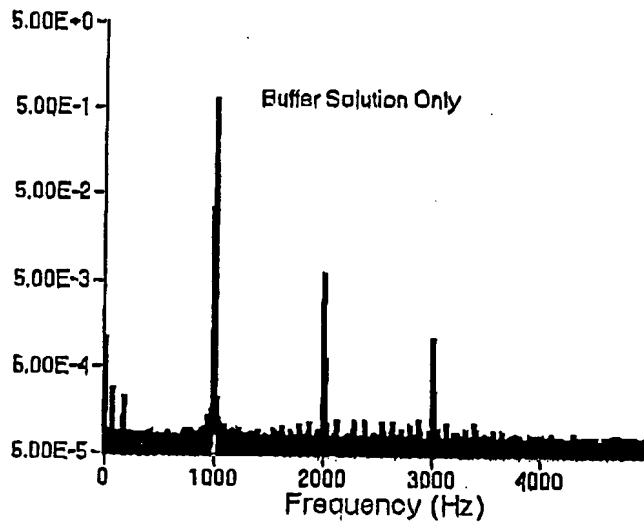


Fig 4A

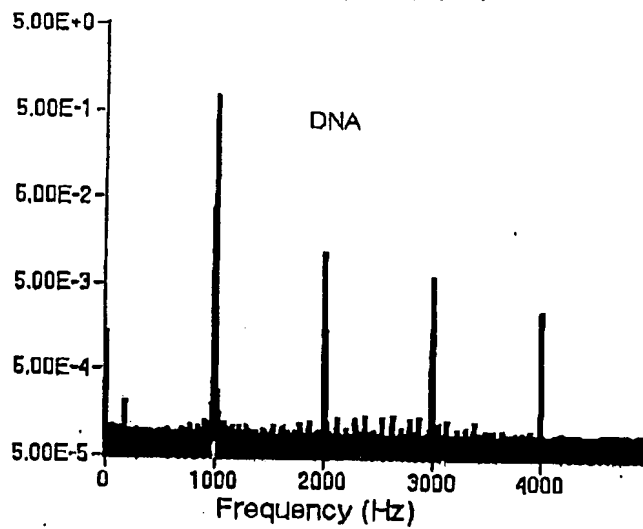
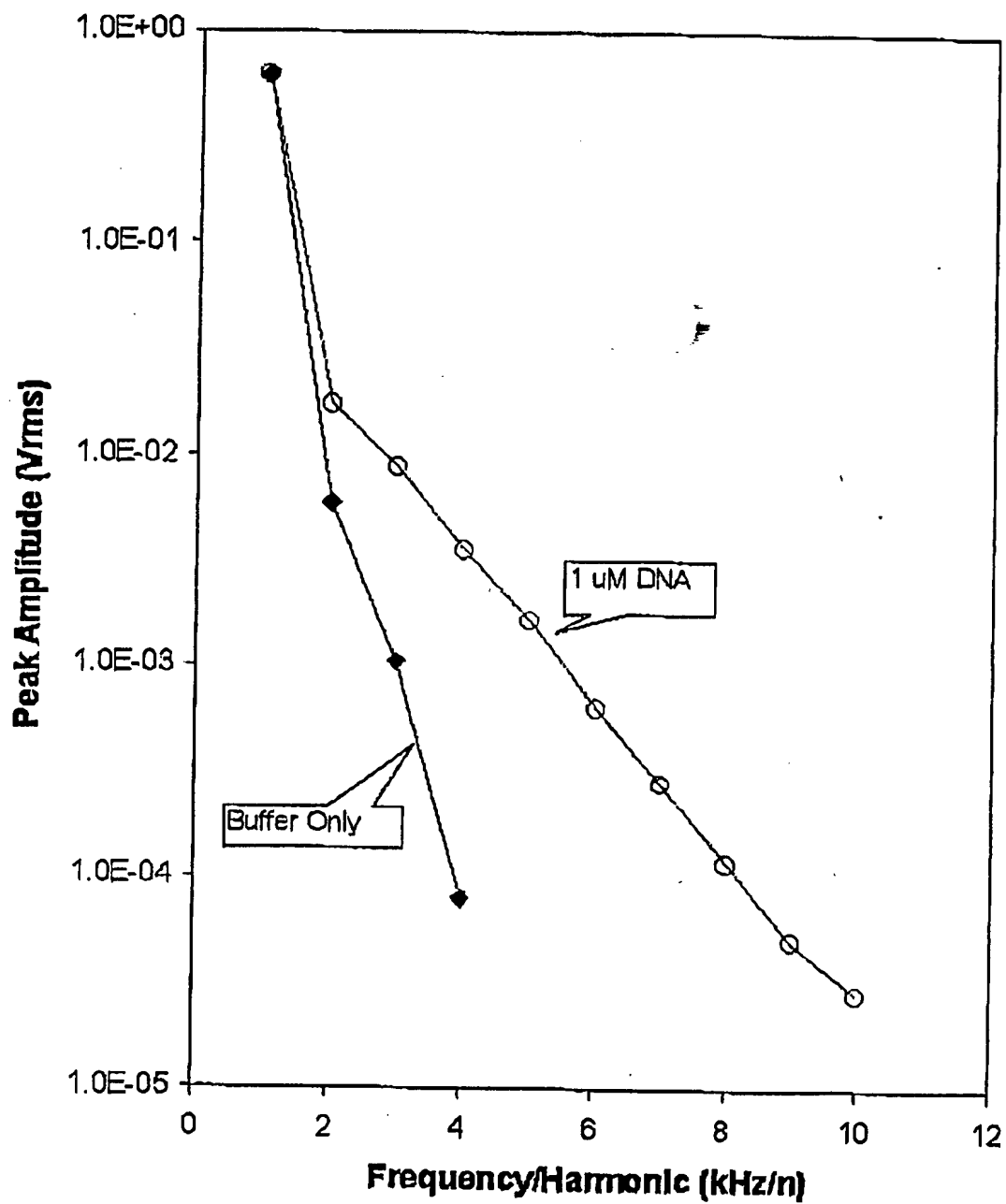


Fig  
4B



Fig 5



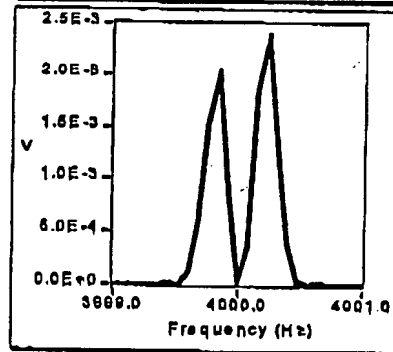
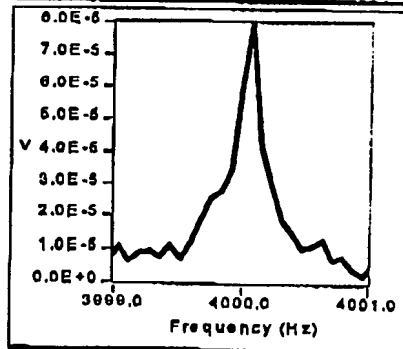
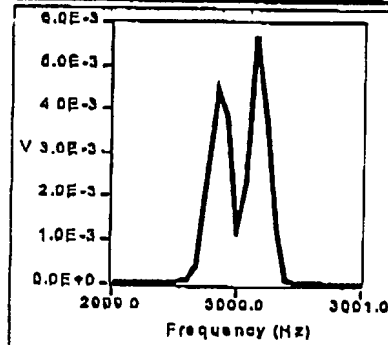
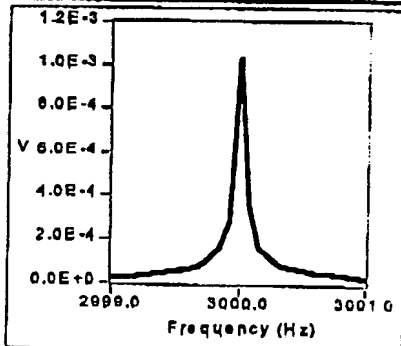
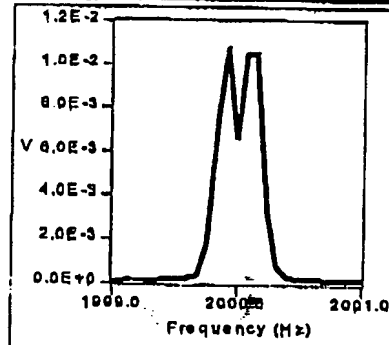
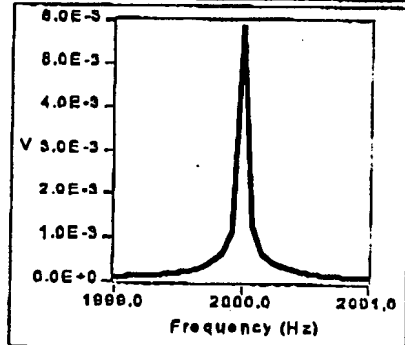
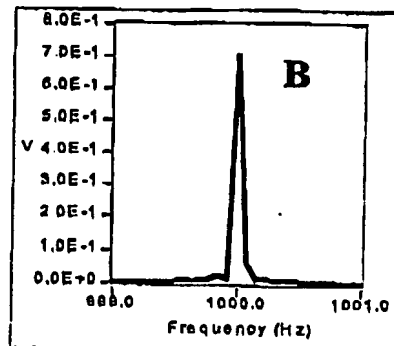
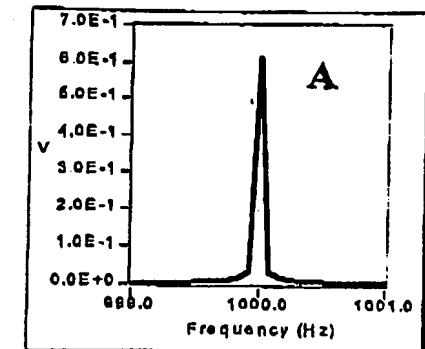
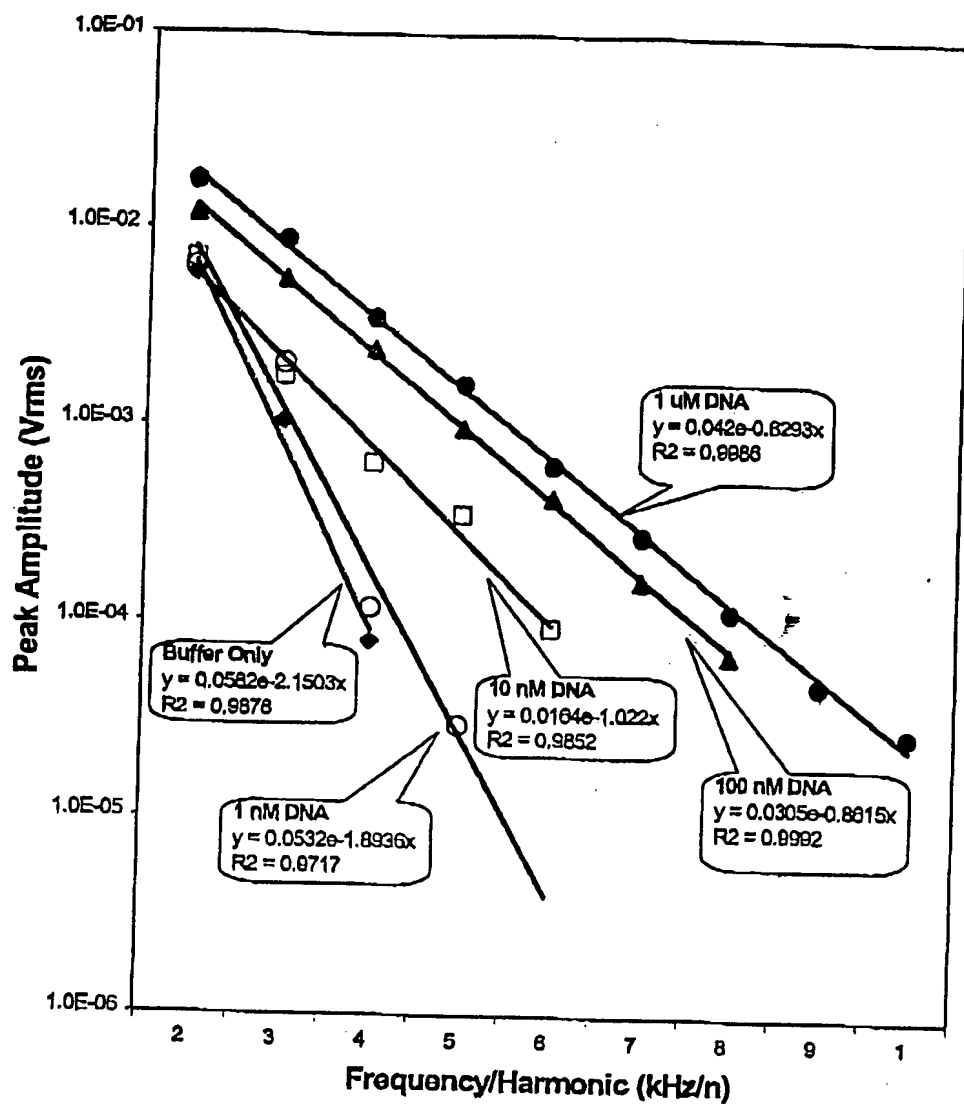


Fig 6

# Sinusoidal ACV FFT Spectra at various DNA Concentrations



**Figure 4.** Results from the detection level study. The y-axis is the peak amplitude of the harmonics ( $n \geq 2$ ) at different DNA concentration (1  $\mu$ M - 1 nM) and the x-axis is the frequency and harmonic number. Also shown are data from the buffer solution measurement.

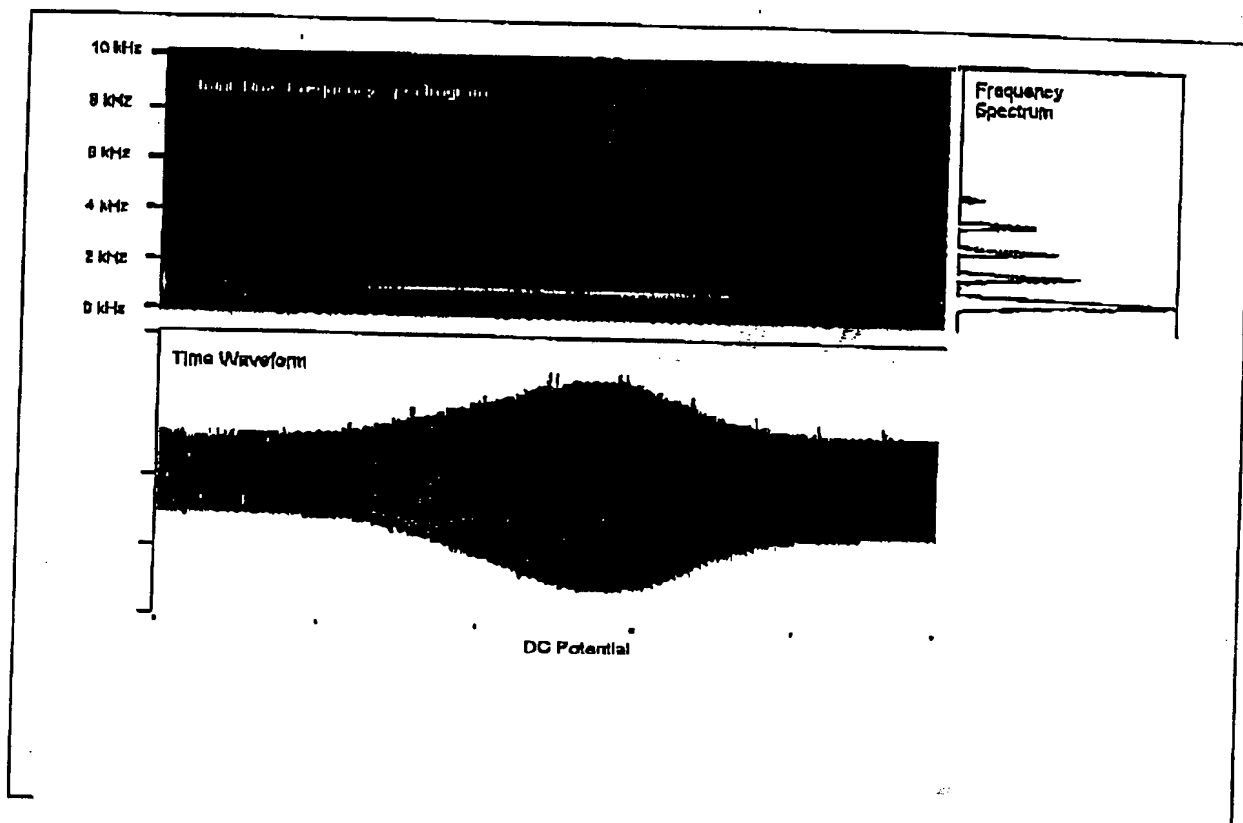


Fig 8

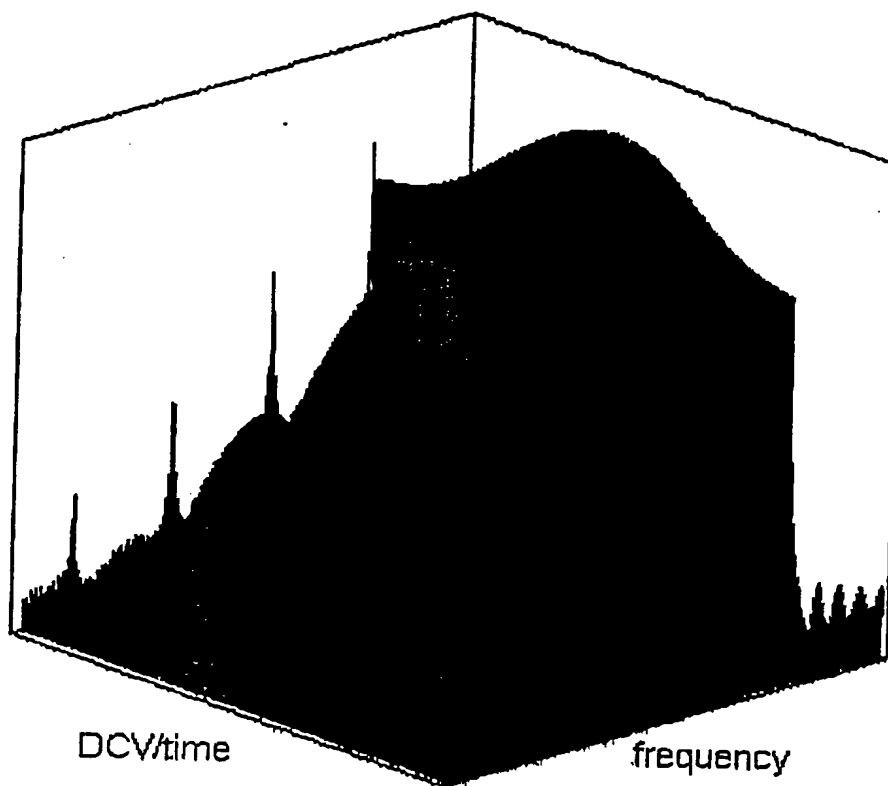


Figure 2. Three-dimensional spectrogram of an ACV scan of a CMS biochip. The amplitude of the cell current is plotted on a log scale to emphasize the higher harmonics. The spectrogram clearly shows the familiar first and fourth harmonic voltammograms. All without a tuned or lock-in ampl! More importantly, other harmonics are also present in the spectrogram.

Fig 9

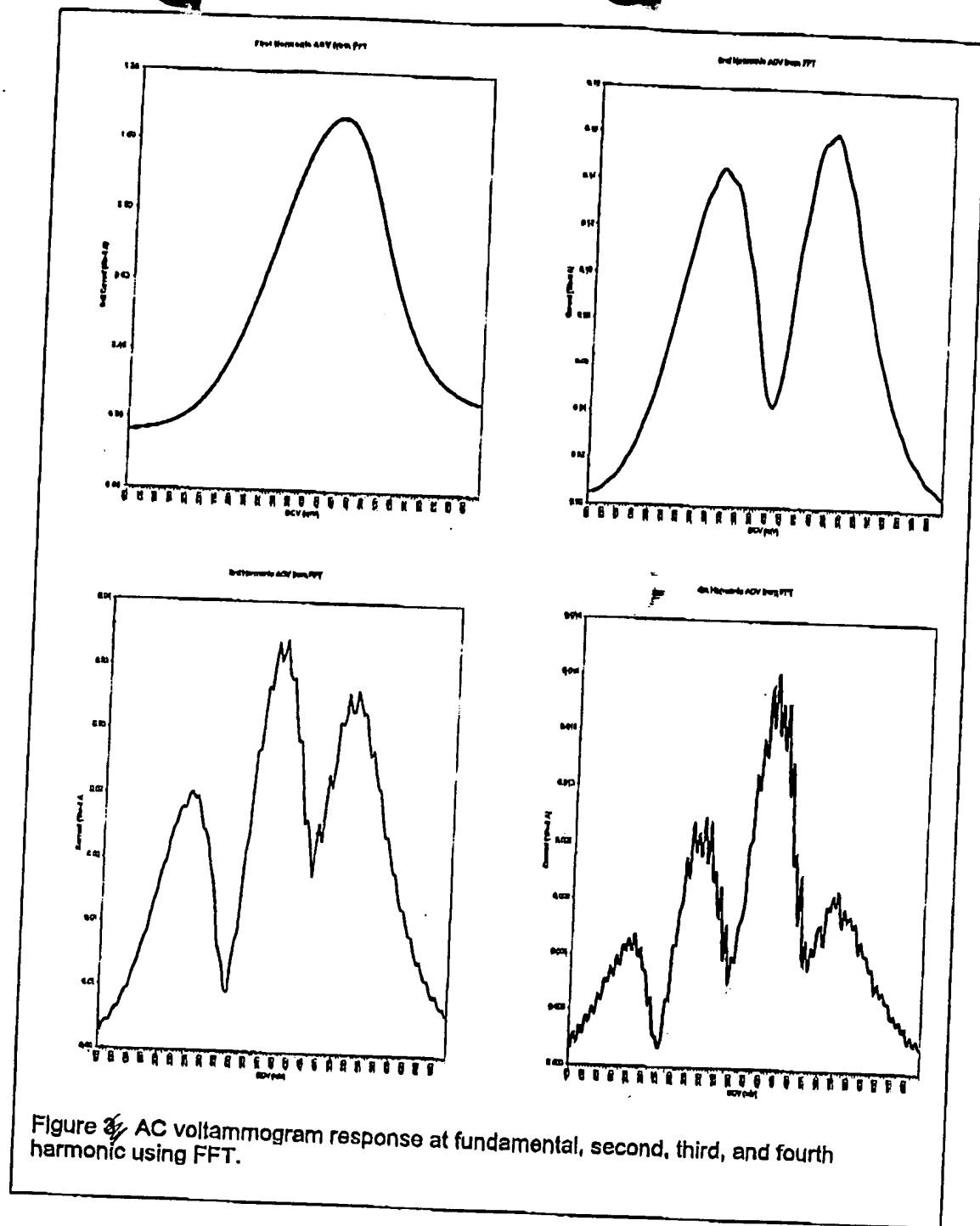


Figure 3 AC voltammogram response at fundamental, second, third, and fourth harmonic using FFT.

Figs 10